

SUMMARY OF THE MOLLUSKS OF THE FAMILY ALECTRIONIDAE OF THE WEST COAST OF AMERICA.

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In reviewing the West American Nassas in the United States National Museum the following notes were made which may be useful to students of the West Coast fauna.

It has long since been pointed out that the name *Nassa*, applied first by Bolten in 1798 to the shell later named by the brothers Adams *Iopas* (*sertum* Lamarck), could not be used for the different group to which Lamarck gave the name a year later.

Bolten included the Lamarckian Nassas, typified by *Buccinum arcularia* Gmelin, in the second section of his genus *Distorsio*. If we regard only the aspect of the shells this arrangement was not unjustified by the current ideas of the time.

The different groups of the Lamarckian Nassas grade into one another so insensibly that it is difficult to award generic rank to any portion of the genus. However, a practical solution of the difficulty from a conchological standpoint, pending anatomical researches, is to use Link's name *Arcularia* (1807) for the group carrying a heavy callus about the aperture and a hump on the back of the last whorl, typified by *Buccinum arcularia* Gmelin; and for the reticulate species with little or no callus, no hump, and simple or nearly simple outer lip, Montfort's name *Alectrion* (1810), typified by *Buccinum papillosum* Linnaeus. The numerous sections into which these groups have been divided, may for the present purpose be ignored. The name which is masculine may be supposed to have been suggested by a distant resemblance of the sculpture to the caruncles of a cock's comb.

Alectrion fossatus Gould, 1850. This is *Buccinum elegans* of Reeve, 1842, but not of J. Sowerby, 1814. Its known range is from Vancouver Island south to the vicinity of Cerros Island, Lower California, and possibly to the Gulf.

Alectrion grammatus Dall, new species. Pleistocene of Santa Barbara, California. About the same size as *fossatus*, but more regular and compact, with a uniform sculpture of flat spiral cords separated by narrow channels without intercalary minor spirals. (Cat. No. 101721, U.S.N.M.) There are several older fossils of this family not included in this list.

- Alectrion (Schizopyga) californianus* Conrad, 1856. This is *fossata* part Gabb, not of Gould. It has been collected from Drakes Bay, north of San Francisco to the San Ignacio lagoon, Lower California.
- Alectrion perpinguis* Hinds, 1844. This is probably the same as *Nassa interstriata* Conrad, 1856, from the Santa Barbara Pleistocene, and has even been reported from the Miocene. Its known range is from Puget Sound to Cerros Island.
- Alectrion dentiferus* Powys, 1835. Peru and Chile.
- Alectrion rubricatus* Gould, 1849. Peru and Chile.
- Alectrion gayii* Kiener, 1834. This is probably *exilis* Powys, 1835, and *obscurus* Hupé 1854. Peru and Chile.
- Alectrion planicostatus* A. Adams, 1851. Payta, Peru.
- Alectrion mendicus* Gould, 1850. *Nassa woodwardi* Forbes, 1850, and *gibbsi* W. Cooper, 1857, are synonymous.
- The species ranges from Kodiak Island, Alaska, to San Diego, California. It is reported from the Pliocene and Pleistocene.
- Alectrion cooperi* Forbes, 1850. Puget Sound and south to San Diego; also Pliocene and Pleistocene. I am inclined to think it distinct from *mendicus*, though the latter sometimes has a few strong ribs.
- Alectrion cerritensis* Arnold, 1903. Originally described from the Pleistocene of Los Cerritos, California. We also have it living from San Pedro to the Gulf of California. The living specimens are not quite as large as some of the fossils, and resemble young specimens of *fossatus*, but are narrower.
- Alectrion pagoda* Reeve, 1844. This is *Buccinum decussatum* Kiener, 1834, but not of Linnaeus, 1758. *Nassa acuta* Carpenter, 1857, and *corpulenta* C. B. Adams, 1852, are synonymous. It is known to range from the Gulf of California to Panama.
- Alectrion miser* Dall, 1908. A rather deep water species, like a coarse, stumpy *perpinguis*, dredged from Acapulco to Panama, and usually eroded.
- Alectrion exsarcus* Dall, 1908. In deep water off the Galapagos Islands.
- Alectrion goniopleura* Dall, 1908. With the last.
- Alectrion townsendi* Dall, 1908. With the two preceding species.
- Alectrion tschudii* Troschel, 1852. From Cerros Island, Lower California, to Peru.
- Alectrion moestus* Hinds, 1844. This was named *brunneostoma* by Stearns in 1893, and ranges from the Gulf of California to Chile.
- Alectrion versicolor* C. B. Adams, 1852. It ranges from Magdalena Bay, Lower California, to Payta, Peru.
- Alectrion nodicinctus* A. Adams, 1851. This species ranges from San Diego, California, to Panama and the Galapagos.
- Alectrion escalae* Philippi, 1860. This extremely pretty little species has been collected at Antofagasta and Mejillones, Chile.
- Alectrion catallus* Dall, 1908. Dredged from off San Miguel Island, California, to the Gulf of Panama.
- Alectrion insculptus* Carpenter, 1863, not of Cooper, 1888. This elegant species has been collected from Point Arena, California, to Cerros Island, and also from the Pleistocene.
- Alectrion insculptus*, new variety *eupleura* Dall. In this form the axial ribs, which in the type are only indicated at the suture, are prolonged over the periphery of the whorl to the base. It has been collected from San Simeon, California, to Cerros Island. (Cat. No. 209046, U.S.N.M.)
- Alectrion taeniolatus* Philippi, 1845. Collected from Acapulco, Mexico, to Guayaquil and Chile. A small reticulate species, white with two or three brown spirals, one at the suture.

- Allectrion limacina** Dall, new species. Shell very small, glistening, yellowish white with flecks of brown, especially one on the anterior angle of the outer lip; nuclear whorls smooth, three, followed by three and a half sculptured whorls; axial sculpture of 8 or 10 ribs coronated at the suture and the shoulder, crossed by two sharp narrow sulci between the sutures and by about six on the last whorl with three stronger on the base; the ribs are obsolete anteriorly on the last whorl; outer lip white, strongly varicose, with six or seven internal lirae. Length, 5.3; diameter, 3 mm. Gulf of California in shallow water. (Cat. No. 274095, U.S.N.M.)
- Allectrion onchodes** Dall, new species. A small, short, acute, swollen, evenly reticulate, whitish shell with a channeled suture, three smooth nuclear and three reticulate whorls, a heavily thickened outer lip with seven or eight denticles inside; a smooth labium, subsutural nodule, and short canal. Length, 6 mm.; width, 5; spire, 2.5 mm. (Cat. No. 96827, U.S.N.M.) Collected from off Cerros Island, Lower California, to Panama.
- Allectrion polistes** Dall, new species. Shell rather large, acute, with nine rounded whorls of which about three are nuclear and smooth, the rest reticulate; the axial sculpture stronger, of (on the last whorl about 23) arcuate, similar, narrow ribs with wider interspaces, crossed between the sutures by six or seven flattish spirals with narrower channeled interspaces in which as a rule there are no intercalary threads. The siphonal fasciole is in front of a deep sulcus, the labial callus is thin and obscurely lirate; the outer lip varicose and internally lirate, the canal very short. The color is yellowish white. Length, 24; width, 15; length of aperture, 12 mm. (Cat. No. 96642, U.S.N.M.) This species has been dredged from Panama Bay to Sechura Bay, Peru, in moderate depths of water.
- Arcularia luteostoma** Broderip and Sowerby, 1829. *A. xanthostoma* Gray, 1839, is synonymous. This very distinct species ranges from the Gulf of California to Chile.
- Arcularia tiarula** Kiener, 1834. Cape St. Lucas to Panama. This is the whitish, polished, smooth-backed form with coronated last whorl and brown spots in front of the suture, which with the two following forms has generally been regarded, following Carpenter, as a variety of *tegula*. It is certain they are intimately allied but are geographically of different distribution. This is the southern form ranging from Cape St. Lucas to Panama.
- Arcularia nodulifera** Philippi in Carpenter, 1857. This form is strongly spirally sulcate and ranges from San Diego, California, to the Gulf of California. It is usually dark gray with a rude surface.
- Arcularia tegula** Reeve, 1853. This is the large, dark-colored form which ranges from San Francisco to San Diego, California.
- Arcularia crebristriata** Carpenter, 1857. This form ranges from Mazatlan to Salina Cruz, Mexico.
- Arcularia complanata** Powys, 1835. This is the dark form of which the two following may be geographical races. It ranges from Panama to Valparaiso.
- Arcularia major** Stearns, 1894. Larger, yellow brown, apparently quite distinct from the preceding. Ranges from Panama to the Gulf of California.
- Arcularia iodes** Dall, new species? Pale violet with darker violet spiral bands and conspicuous white callus about the mouth. Smaller than *major* or *complanata*. (Cat. No. 53946, U.S.N.M.) Gulf of California.
- Arcularia scabriuscula** Powys, 1835. *Nassa stimpsoniana* C. B. Adams, 1852, is synonymous. Ranges from Montijo Bay, Central America, to Panama.

Arcularia exilis Powys, 1835. This is *Nassa fontainei* Orbigny, 1841, and *panamensis* Philippi, 1851, not of C. B. Adams, 1852. It ranges from Panama to Peru and Chile.

Ilyanassa obsoleta Say, 1822. This species has been introduced with "seed" oysters from the Atlantic coast, and at last accounts was flourishing on the oyster beds in San Francisco Bay.

The only recorded recent species from this region of which I have not seen specimens and which are not contained in the collection of the United States National Museum are *Arcularia paposana* Philippi, 1860, from Paposo, Chile; *festiva* Powys, 1835, Panama to Guayaquil; and *sparta* Marrat, 1897, from the "west coast of South America."

The following forms near to or usually associated with the Nassas, may not improperly be included here:

Genus PHOS Montfort, 1810.

Phos cocosensis Dall, 1896. Gulf of Panama, Cocos Island. (Gulf of California?)

Phos crassus Hinds, 1844. Lower California and the Gulf of California.

Phos chelonia Dall, new species. Shell very similar in general appearance and size to *P. varicosus* Gould, having similar whitish varices, about three or four to a whorl, but differing by having the whorls appressed to the suture, not deeply impressed, and in having a nuclear shell of five or six whorls, deeply spirally sulcate instead of a nearly smooth one of three and a half whorls. The color of the present species is pale yellowish with a tinge of brown, as in *varicosus*, which also has narrower and more numerous ribs between the varices. (Cat. No. 194961, U.S.N.M.) Dredged at the Galapagos Islands in 40 fathoms.

Phos alternatus Dall, new species. Shell resembling *P. cancellatus* in a general way, but without the nodose-prickly sculpture. Whorls six with two or three nuclear turns in addition. Suture distinct, not deep, spire about as long as the aperture; sculpture of narrow, nearly straight, axial ribs with wider interspaces, about 22 on the last whorl, extending to the base; these are overridden by (between the sutures five) flattened, straplike spirals, with narrower channelled interspaces, in which are two or three very fine distinct spiral threads. The intersections are not nodulous, though the spirals are undulated where they cross the ribs. The outer lip is hardly thickened, not varicose but lirate within, the pillar simple with a sharp basal fold. Length, 26; width, 12 mm. (Cat. No. 212110, U.S.N.M.) This species like most of the others is occasionally banded with brown. The specimens examined are from the Gulf of California.

Phos mexicanus Dall, new species. Shell small, slender, not unlike *P. articulatus* Hinds, but without the articulations; with only 10 ribs on the last whorl instead of 14; with eight or nine whorls; the suture appressed, the spiral sculpture of flattish threads, larger and flatter on the base; between sutures two or three spirals more prominent than the rest and swollen where they pass over the axial ribs; aperture simple, lips not callous, pillar without a keel anteriorly; the canal short, the siphonal notch deep. Length, 23; diameter, 8.5; length of last whorl, 13 mm. (Cat. No. 212111, U.S.N.M.) Ranges from Cape St. Lucas to Panama.

Phos minusculus Dall, new species. Shell very small and thin, with about six whorls without the nucleus; whorls rounded, suture distinct, with two undulated spiral threads in front of it, and in front of them six flattened threads with wider channelled interspaces between the sutures on the penultimate whorl; these are not swollen when they cross the ribs, of which on the last whorl there are 14, with wider interspaces; there are no intercalary spirals; outer lip slightly

varicose, with about 10 short internal lirae; labium smooth with no subsutural callus and no anterior keel on the pillar. Length, 12; diameter, 5; length of last whorl, 8 mm. (Cat. No. 122775, U.S.N.M.) Dredged in Panama Bay in 26 to 47 fathoms. This is the smallest species so far on record.

Genus NASSARINA Dall, 1889.

Nassarina solida Dall, new species. Shell small, solid, strongly sculptured, short-fusiform, dark brown, with white spots on the ribs in front of the periphery on the last whorl; there are about six rapidly increasing sculptured and three smooth nuclear whorls; sculpture of seven strong rounded axial ribs, obsolete on the base, overrun by, between the sutures, three very strong spiral cords, the most prominent pair being peripheral; the other, just in front of the appressed suture becomes obsolete on the last whorl; the whorl slightly in front of the latter cord is constricted, the constriction corresponding to a prominent callosity, or nodule on the inside of the outer lip; the entire surface is also covered by very fine uniform sharp spiral threads; the canal is short and slightly directed to the right; the aperture is small, the labium with a thin coarsely lirate callus and a large subsutural callosity; the outer lip beside the nodosity above referred to has five well-developed denticles and is internally thickened but not varicose. Length, 12; diameter, 6; length of aperture including the canal, 5 mm. Near La Paz, Gulf of California, in 8 fathoms. (Cat. No. 274095, U.S.N.M.)

Genus HINDSIA Adams, 1853.

Hindsia perideris Dall, 1910. Gulf of California, near La Paz.

Genus NORTHIA Gray, 1847.

Northia northiae Gray, 1833.

This is *Buccinum serratum* Dufresne, in Kiener, 1834, not of Brocchi, 1814; and *B. pristis* Deshayes, 1844. It ranges from the Gulf of California to Guayaquil.

In the proceedings of the United States National Museum, volume 26, page 350, I called attention to the fact that no species of *Gouldia* was yet known from the Pacific coast. Since then the supposed deficiency has been supplied by the discovery among some unworked small shells from the Gulf of California of a new species of that genus.

Genus GOULDIA C. B. Adams, 1847.

Gouldia californica Dall, new species. Shell small, thin, white, with touches of brown along the dorsal border, ovate-triangular, the anterior lateral tooth large and prominent, the pallial line hardly sinuated; sculpture reticulate, the concentric sculpture more prominent in the middle of the disk, the radial toward the ends of the valves; the inner valve margins smooth. Length, 6; height, 5.5; diameter, 3 mm.

Gulf of California near La Paz, in 21 fathoms. (Cat. No. 211736, U.S.N.M.)

This is a smaller and frailer species than either of those of the Atlantic coast.